

WHAT IS CLAIMED IS:

1. A system for determining an acoustic and/or thermal characteristic of a target material, comprising:

an acoustic source arranged to direct a sound wave at a target material;
a device for measuring a sound pressure generated by at least the acoustic source, to obtain a sound pressure measurement;

a density sensor arranged to measure a density of the target material to obtain a density measurement; and

an analyzer arranged to receive the sound pressure measurement and the density measurement, wherein the analyzer is capable of determining an acoustic and/or thermal characteristic of the target material based on the sound pressure measurement and/or the density measurement.

2. The system according to claim 1, wherein the device for measuring the sound pressure comprises at least two sound pressure sensors capable of measuring a sound pressure drop across the target material.

3. The system according to claim 1, wherein the device for measuring the sound pressure comprises:

at least one first sound pressure sensor arranged to measure a first sound pressure between the acoustic source and the target material; and

at least one second sound pressure sensor arranged to measure a second sound pressure, wherein the target material is present between the acoustic source and the second sound pressure sensor.

4. The system according to claim 1, wherein a conveyor is arranged to continuously convey the target material through an exposure area, wherein the sound wave directed from the acoustic source is directed at the exposure area.

5. The system according to claim 4, wherein the conveyor is arranged to continuously convey a portion of the target material not previously exposed to the sound wave, to the exposure area.

6. The system according to claim 1, further comprising a waveguide for directing the sound wave at the target material, wherein the waveguide is arranged between the target material and the acoustic source.

7. The system according to claim 6, wherein a first end of the waveguide is connected to a baffle, and a second end of the waveguide is connected to the acoustic source.

8. The system according to claim 7, wherein the target material is not in contact with the baffle.

9. The system according to claim 8, wherein the target material is arranged within 2 cm from the baffle.

10. The system according to claim 6, wherein the device for measuring the sound pressure comprises a first sound pressure sensor arranged in a sidewall of the waveguide.

11. The system according to claim 10, wherein the device for measuring the sound pressure further comprises a second sound pressure sensor arranged from about 2 to about 200 cm from the target material.

12. The system according to claim 1, wherein the target material has a substantially constant thickness.

13. The system according to claim 1, wherein the target material comprises a fiberglass material.

14. The system according to claim 1, wherein the system is located downstream from an apparatus for forming the target material, and wherein the system is arranged to receive a continuous supply of the target material from the apparatus.

15. The system according to claim 1, wherein the system is located on a production line of the target material.

16. A method for determining an acoustic and/or thermal characteristic of a target material, comprising:

directing a sound wave emitted from an acoustic source at a target material;

measuring a sound pressure generated at least by the sound wave, to obtain a sound pressure measurement;

measuring a density of the target material to obtain a density measurement; and

determining an acoustic and/or thermal characteristic of the target material based on the sound pressure measurement and/or the density measurement.

17. The method according to claim 16, wherein the step of measuring the sound pressure comprises measuring a sound pressure drop across the target material.

18. The method according to claim 16, wherein the step of measuring the sound pressure generated at least by the sound wave comprises:

measuring a first sound pressure between the acoustic source and the target material; and

measuring a second sound pressure, wherein the target material is present between the acoustic source and the location at which the second sound pressure is measured.

19. The method according to claim 16, further comprising continuously conveying the target material through an exposure area, wherein the sound wave directed from the acoustic source is directed at the exposure area.

20. The system according to claim 19, wherein a portion of the target material not previously exposed to the sound wave is continuously conveyed to the exposure area.

21. The method according to claim 16, wherein a waveguide for directing the sound wave at the target material is provided, wherein the waveguide is arranged between the target material and the acoustic source.

22. The method according to claim 21, wherein a first end of the waveguide is connected to a baffle and a second end of the waveguide is connected to the acoustic source.

23. The method according to claim 22, wherein the target material is not in contact with the baffle.

24. The method according to claim 23, wherein the target material is arranged within 2 cm from the baffle.

25. The method according to claim 21, wherein a first sound pressure sensor is arranged in a sidewall of the waveguide.

26. The method according to claim 25, wherein a second sound pressure sensor is arranged such that the target material is present between the acoustic source and the second sound pressure.

27. The method according to claim 16, wherein the target material has a substantially constant thickness.

28. The method according to claim 16, wherein the target material comprises a fiberglass material.

29. The method according to claim 16, wherein the acoustic source is located downstream of an apparatus for forming the target material, wherein the system is arranged to receive a continuous supply of the target material from the apparatus.

30. The method according to claim 16, wherein the target material is present on a production line thereof.

31. The method according to claim 16, wherein the steps of measuring a sound pressure and measuring a density of the target material, are conducted simultaneously.